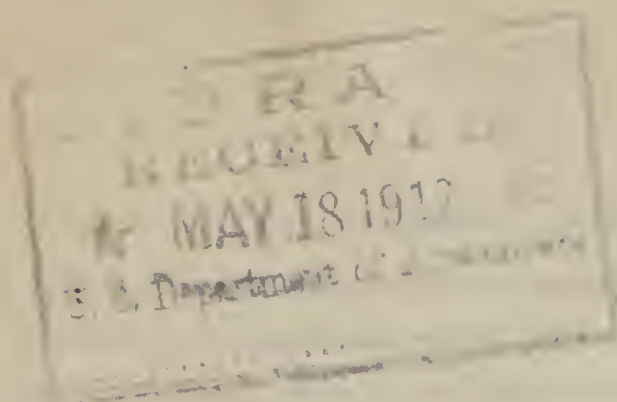


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United States Department of Agriculture,

BUREAU OF PLANT INDUSTRY,

Farmers' Cooperative Demonstration Work,

WASHINGTON, D. C.

EMERGENCY CROPS FOR OVERFLOWED LANDS IN THE MISSISSIPPI VALLEY.¹

INTRODUCTION.

The overflow of immense areas of valuable and very fertile farm lands along the Mississippi River in the spring of 1912 and the continuing of the water upon them until late in the season threaten the agriculture of the affected district with a disaster which can only be reduced or avoided by diligent and faithful work.

In sections where no cotton is raised the problem is to be met by going on the land as soon as possible and planting early-maturing varieties of crops, paying special attention to late gardens and such standard crops as will mature in a relatively short period.

In those sections where cotton has been the standard crop the farmers must realize that even if the water gets off in time but a very limited acreage in cotton should be planted. Under such circumstances the problems facing the farmer and planter are as follows:

(1) To grow such crops as will supply food for the families; (2) to provide the necessary feed for the work stock and all other live stock that may be on the farm; (3) to produce some crops to sell for cash; (4) to cultivate the land, preventing it from becoming overrun with noxious weeds and to keep it in condition for another year; and (5) to hold the laborers in the country in order that they may be there for the production of normal crops in 1913.

With a view to assisting the farmers of the flooded territory in meeting the situation the Department of Agriculture makes the following general suggestions.

¹ This circular has been prepared as a result of the action of a committee composed of members of the staff of this Bureau appointed for the purpose of suggesting measures for the relief of the present unfortunate conditions prevailing in the flooded districts along the Mississippi River.—*B. T. Galloway, Chief of Bureau.*

FIELD CROPS.

Cotton.—Cotton may be planted on overflowed land up to June 15 with the expectation of producing a fair crop if the season is normal. Plant only quick-maturing varieties, such as King's, Toole's, Simpkins's, Money Maker, Bank Account, or some similar type. No more cotton should be planted than can be worked intensively and picked over once a week, if necessary, for weevils and punctured squares. Cotton should be planted, if possible, on land that had been bedded before the overflow, taking the first land from which the water recedes. Follow up the water closely each day, planting as fast as the land is uncovered, so that the cotton may have time to come up before the surface bakes. The seed for each day's planting should be wet and rolled in dirt or ashes the evening previous and then put in piles to swell during the night. Plant the next day by throwing the seed in the soft mud on top of the bed. Throw hard, so that the seed will be buried in the mud. In planting, walk by the side of the bed. Do not trample the top of the bed or press in the seed with the foot, a hoe, or in any other manner. Prepared and planted in this way the seed should germinate and the cotton be up in two or three days. Cultivate with harrows or cultivators as soon as the surface is dry enough to permit, in order to break the crust and kill the weeds and grass. Thin to a stand as quickly as possible. Then continue the usual cultivation.

With reference to the boll weevil the Bureau of Entomology has recently made the following statement:

During the season of 1911 the boll weevil was reduced to a very low point in the larger part of the territory that has been flooded. Even without floods during 1912 in a large portion of the upper Mississippi Delta comparative immunity from boll-weevil damage could have been expected. The flood occurred before many of the weevils had emerged from their hibernating quarters and has therefore still further reduced the number of the boll weevils present. It must not be supposed, however, that all of the weevils have been exterminated. A certain number find winter quarters in Spanish moss and under the bark of trees at some distance above the high-water line and will be present to damage the crop of 1912. It should also be understood that during the season there will be a flight of weevils into the flooded area; therefore, total immunity from damage can not be expected.

If boll weevils appear on cotton in the flooded area a prompt and persistent fight must be made to exterminate them. The infestation will probably be light, but it must not on that account be overlooked. Some weevils will probably appear on the young cotton almost as soon as it is up. They must be carefully picked by hand from the bud of the young cotton, and later on all punctured squares must be picked and destroyed weekly. The weevils first appearing are old weevils that will soon die, and if they and the squares punctured by them are all destroyed the overflowed territory may be kept practically free of weevils until late in the season. Wherever there is land above the overflowed area on which cotton was planted at

about the usual time, extra care must be used to locate such tracts and to see that all weevils and punctured squares thereon are destroyed. If this is neglected, such isolated fields may breed enough weevils to seriously threaten the crop on the overflowed land. Upland farmers everywhere should make a close, persistent fight on the weevil by picking the adult weevils and infested squares. This will minimize possible damage to their own crop and reduce the number of weevils to migrate in the fall. If a persistent and determined fight is made on the weevils they need not prove a serious factor in producing cotton on the overflowed lands this year. In 1909, in Louisiana, on land now overflowed, cotton was completely destroyed by hail and was replanted June 7, 8, and 9. There was a heavy infestation in that section, but a persistent fight on the weevils was made and nearly half a bale of cotton per acre produced.

Corn.—If the water recedes in time to permit it, at least 10 days or 2 weeks should be allowed to intervene before planting corn, and the ground should first be thoroughly prepared. Experience in overflowed districts has shown that this is necessary in order to prevent insect damage. This procedure will also make subsequent cultivation easier and increase the chances of securing a good crop. Early-maturing varieties of corn may be planted as late as July 1 and Mexican June corn possibly as late as July 25. Where the land was bedded before the overflow, sufficient preparation can be made by running cultivators over the beds twice. If the land was not bedded before the overflow, break shallow and harrow thoroughly before planting. Dwarf varieties of the Mexican June corn are usually the safest crop for late planting. If this variety can not be obtained, plant other early varieties, such as Improved Leaming, Iowa Silvermine, or any other reliable seed of similar type. Cultivation should begin as soon as the corn is up and should continue once a week until laid by.

Cowpeas.—Cowpeas for seed may be planted as late as July 15. The Whippoorwill and New Era are probably the best varieties for late planting. Planted in rows and cultivated, a yield of from 10 to 15 bushels of peas and $\frac{1}{2}$ to 1 ton of vines to the acre may be expected. The market for cowpeas is good. Seed is scarce; it is now selling at from \$2 to \$2.50 per bushel and is seldom worth less than \$1 per bushel. If sufficient seed can be obtained for planting, cowpeas should prove a very good money crop for the overflowed section. Perhaps the best plan is to plant in rows as now laid off for corn or cotton. Drag or harrow the old beds as soon as fairly dry, making a good seed bed. Drill seed 3 or 4 inches apart in the row or plant in hills 1 foot apart, putting 3 or 4 seeds in the hill. Sown in this way 1 bushel of seed will plant 3 or 4 acres. Give two or three cultivations. One hoeing may also be necessary to keep down the weeds and grass. Another variety of cowpea always in demand for table

use at good prices is the California Blackeye, which may be grown in the manner already described. For forage purposes only, the Clay, Unknown, Black, and mixed peas are as good and possibly better than the varieties mentioned.

Peanuts.—The peanut, especially the Spanish variety, offers many possibilities as a money crop throughout the greater part of the flooded districts of the Mississippi Valley. Spanish peanuts can be planted as late as July 1 and yet make a good crop.

Peanuts are best adapted for growing on the lighter soils and those that have been sanded by the flood, but they will grow on almost any soil. Plant 2 to 5 acres. One bushel (30 pounds) of Spanish peanuts in the shell will plant an acre. Drag down the tops of the beds with a harrow or plank drag. Open a small furrow about 2 inches deep with a bull-tongue or other plow. Drop the peanuts, one pod in a place, 8 to 9 inches apart in the furrow. Cover the pods with a hoe, being careful not to cover them more than an inch or two deep. Cultivate them between the rows before the peanuts are up and hoe the crop carefully as soon as there is a stand. Cultivate three or four times and hoe often enough to keep the crop free from grass and weeds. At the last cultivation throw the soil well up to the peanuts, forming a bed for the pods to make in.

Late in the season when the peanut vines begin to turn yellow, take a 1-horse plow, remove the moldboard but leave the point on it, and simply plow out the entire peanut plants by running the plow under one side of the row. After the peanut vines have dried for an hour or two in the sun, stack the vines around small poles or stakes about 6 feet high. Before beginning to build a stack, nail two crosspieces to the pole about 8 inches from the ground to hold the bottom of the stack off the ground. In building the stack keep the peanuts all to the pole and only one layer of vines around each pole. Keep the middle of the stack high to shed rain, draw the top of the stack to a point, and cover with a little grass. Do not make the stacks too large; the smaller the better. They should be about 5 or 6 feet high and 25 or 30 stacks on an acre.

After the peanuts have been in the stacks about six weeks they can be picked from the vines by hand. There are machines for doing this work, but 3 to 5 acres can be picked by hand. After the peanuts are picked, spread the pods upon a cotton sheet and pick out all trash and stems; then bag them for the market.

Where hogs are to be fattened, the Spanish peanut will be found a valuable feed for this purpose. The hogs can be turned into the peanuts and allowed to root them from the ground, thus saving the labor of gathering the crop. Peanut tops make excellent hay and should be carefully saved. It is comparatively easy to grow 20 bushels of peanuts to the acre and to get 75 cents a bushel for them. On 5 acres this would mean \$75 in cash, besides the hay.

Soy beans.—Soy beans can be planted as late as July 20 and mature seed. They make excellent food for man and stock and will grow on wetter soils and stand more cold than cowpeas; they are also a surer crop for producing grain. For these reasons a more general use of them should be encouraged.

Where the land was plowed before the overflow, the beds can be put in condition by harrows or cultivators. Where the land has not been broken, plow shallow and harrow thoroughly before planting, as a good seed bed is very essential in securing a stand.

Drill the seed shallow, about like cotton, one seed about every 2 or 3 inches. Poor stands result oftener from too deep planting than from any other cause. Mammoth Yellow or Hollybrook are the two best varieties for southern conditions. With normal conditions and good cultivation the yield should be from 10 to 15 bushels of grain and a ton of straw per acre, if planted before July 5. Cultivate shallow with sweeps or cultivators frequently enough to keep the land free from weeds and grasses.

The demand for soy-bean seed has increased rapidly in the past few years, and good prices may be expected for seed. This is usually worth from \$1.50 to \$2.50 per bushel. The seeds are very rarely attacked by the weevils and can therefore be stored with little risk.

Soy beans may be used for hay or green feed in exactly the same manner as cowpeas.

Sorghum.—No other crop will give so large a yield of forage in a short time as sorghum. This, together with the fact that the seed is plentiful and cheap, makes it a desirable crop for planting in the overflowed region. Amber and Orange are the varieties most commonly grown, and these are both excellent for sirup production as well as for forage. Sorghum may be planted safely as late as July 1. For forage it may be planted either broadcast at the rate of 1 to 2 bushels per acre or in rows and cultivated. For sirup it is planted only in rows. The rows may be of any convenient width and are usually 3 to 3½ feet wide, but in the present case the use of the old cotton and corn rows is advised. From 4 to 6 pounds of seed per acre are sufficient for planting in this way, drilling the seed about an inch apart in the row. The preparation of the soil and cultivation should be the same as for corn.

Watermelons.—Late watermelons may be grown as a profitable money crop when the farmer lives near a good local market.

A warm sandy or loam soil is necessary to produce the best quality of melons. The land must be well drained, for, notwithstanding the name, watermelons thrive best on comparatively dry land. The land should be thoroughly plowed, not necessarily deep, and pulverized well. The hills should be from 8 to 12 feet each way. Where fertilizers are used the rows may be opened deep one way and the fertilizers distributed and mixed by running the shovel plow twice;

bed on this furrow with turnplow four furrows, prepare hills with rake or hoe, plant from 10 to 12 seeds of any suitable variety, and cover 1 to 1½ inches with light soil. When well up cultivate closely and continue shallow cultivations frequently until the vines are running in the middles. The vines should be thinned to two or three of the most hardy before starting to run. The best growers claim that the cultivation should never disturb root or vine.

Sweet potatoes.—The sweet potato is one of the most important food crops throughout the Mississippi Valley. Seed stock is very scarce this year, and it will be difficult to secure enough plants or cuttings for planting. By the time the flooded districts are dry enough for planting it will be too late for starting plants and the hill sections must be depended upon for either plants or cuttings. It is suggested that farmers in the flooded districts appeal to their friends in the hill country who have bedded sweet potatoes to save the beds after they have pulled plants for their own planting, so that the later plants can be had for planting in the flooded regions. Merchants and plantation owners in the flooded districts should spare no effort in locating a supply of sweet-potato plants for distribution to their people, in order that a crop of sweet potatoes may be grown for food purposes. It may also be possible to secure considerable quantities of vine cuttings from the hill sections at a later date, especially where these can be found within hauling distance. In the lower Mississippi Valley sweet potatoes may be planted as late as July 20 and yet make a fair crop.

Prepare the old corn or cotton rows thoroughly before planting. If the land was broken previous to the overflow, this may be done with cultivators. If not previously broken, plow and harrow well. Where sets or drawings are to be used it is a good practice to dip the roots in soft mud before setting. If the land is dry and the plants wilt badly, pour water about the roots and throw some dry dirt over the wet soil. The plants should be set from 15 to 18 inches apart in the row. Vines cut from early-planted sets may also be used. These should be cut 10 or 12 inches long and put out in the same manner as sets. The rows should be cultivated and hoed until the vines cover the surface enough to shade out weeds and grass.

VEGETABLE GARDEN.

One of the most important problems in the flooded districts will be to grow something for the people to eat. By the time the land is dry enough to work it will be too late in the season to plant most garden crops. It will be possible, however, to get a crop of cabbages, collards, turnips, black-eye peas, onions, late tomatoes, okra, snap beans, squashes, and watermelons.

The principal difficulty will be to secure seeds, and it will be desirable for the merchants and bankers to look out for a supply. A well-prepared, well-drained, fertile sandy-loam soil should, if possible, be selected for the vegetable garden. All garden crops require frequent and careful shallow cultivation.

Cabbage.—The varieties of cabbage best suited for summer and autumn growing are All Seasons and Late Flat Dutch. One-fourth of a pound of seed will furnish plants enough to set 1 acre. Drill seed thinly in a well-prepared seed row, and when the plants are of sufficient size transplant them to the field. Before transplanting, the land should be thoroughly prepared. Transplanting should be done in the evening. Water the newly set plants and, if the weather is clear and hot, protect from the sun by setting a shingle or a piece of bark on the southwest side of the plant, allowing it to remain for several days, until the plant is well rooted. Set in rows about 3 feet apart and the plants 15 to 20 inches apart. Give frequent shallow cultivation. If insects prove troublesome, dust the plants either with Paris green mixed with flour or slaked lime, or dust with insect powder. No kind of poison should be applied to the cabbages after they begin to head.

Onions.—It is now too late to secure any considerable supply of onion sets, so the seed will have to be depended upon for this crop. One-fourth of an ounce will be sufficient to plant the onions needed by an ordinary family. Prepare the ground in the best possible shape for onions, making a little drill or furrow with the hoe handle in which to sow the seed. Drop the seeds about 20 to 25 to a foot of row and cover about one-half an inch deep. As soon as the plants are nicely up, thin them to about 10 or 12 plants to the foot. The young plants pulled out in thinning can be reset to increase the size of the onion patch. The plants grown from seed are cultivated and handled in the same way as those from sets.

Beans.—Several kinds of beans, especially the snap beans, can be grown late in the summer and will give a supply both of green beans and dried beans for winter use. Plant the bunch varieties in rows of convenient width for cultivation, dropping beans 4 to 6 inches apart. Plant the pole varieties in hills 3 feet apart in the row, putting three or four beans in each hill. Beans should be planted $1\frac{1}{2}$ to 2 inches deep. Give good cultivation.

Soy beans.—There is, perhaps, no crop that will give so great results from a food standpoint as the soy bean, plenty of seed for which can be procured. As soon as the beans are well grown, the pods can be picked and thrown in boiling water for about 4 minutes, after which they will shell readily. Cook the beans the same as green black-eye peas or shelled beans. The dry soy beans can be used the same as black-eye peas, but are greatly improved by

the addition of a few tomatoes. The food value of soy beans is greater than that of black-eye peas. Soy beans can also be ground into a meal and used for griddle cakes and muffins.

NEED OF RAPID CULTIVATION.

It is important that as much of the overflowed land as possible be planted in some crop when the water recedes. Preventing the land from being overrun with cockleburrs and other weeds is alone well worth considerable effort. Planting cowpeas, soy beans, sorghum, and other crops in the old cotton and corn rows rather than in rows of the usual width for these crops serves the double purpose of saving time in getting the crop started and covering more land. Fast work will be necessary, and, wherever practicable, harrows, weeders, diverse cultivators, and other implements for rapid cultivation should be used instead of single sweeps in the cultivation of all crops.

BRADFORD KNAPP,
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